

ATTACKS BY BLACK EAGLES ON VULTURES

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ABSTRACT - Numerous attacks by the Black Eagle (*Aquila verreauxi*) on vultures were observed. While only once was an eagle seen eating a vulture nestling, many other attacks by eagles on the nestlings and eggs of the Cape Griffon Vulture (*Gyps coprotheres*) were interpreted as predation attempts. The vulture recognizes the eagle as a predator, and the plumage and behavior of feathered nestlings possibly have a camouflage function. Eagles also attack flying vultures, but these instances are probably territory defense.

The Black (Verreaux's) Eagle (*Aquila verreauxi*) is a cliff and mountain dwelling raptor that preys largely on the Dassie (Order Hyracoidea), which are compact tail-less mammals up to 5 kg in wt. In the Matopos area of Zimbabwe, for example, where the eagle has been intensively studied for 20 yrs, 98.5% of more than 2,000 prey items were of two species of dassie (Gargett 1980). In other areas a greater variety of prey has been recorded including birds, and particularly gamebirds, but Brown and Amadon (1968) suggested that all prey is "taken on the ground." The Black Eagle also readily feeds on carrion (Steyn 1982).

Having studied vultures around southern Africa for some years, we are impressed by the number of interactions that we have seen between Black Eagles and vultures. Always the eagle has initiated an encounter; sometimes the vulture has reacted to the eagle (a true interaction) and at other times it has not. Because the Black Eagle inhabits the same mountainous areas as does the Cape Griffon Vulture (*Gyps coprotheres*), all but one of the encounters we have seen were between these species. We detail our observations here, and review others from the literature.

OBSERVATIONS

All nine colonies of Cape Griffon Vultures that we have studied are contained within the territories of Black Eagles. Thus the paired eagles have daily access to vultures, and on many occasions we have seen one or both eagles, and occasionally the juvenile, fly into the vulture colony and attack birds at a nest. Thirteen of these incidents are listed in Table 1, and 11 were directed at a nest with a nestling; five attacks were successful, in that the nestlings were removed from their nests. Six attacks on nestlings were unsuccessful, as were two directed at a nest with an egg. In some instances, the nestlings were described as downy or feathered; the eagle flew off with a downy chick in its foot on three

occasions, but knocked the feathered nestling out of its nest and thus onto the ground. In this latter instance the eagle flew down with the falling nestling and remained with it on the ground, but did not actually feed on it. The two adults listed in incident no. 13 (Table 1) possibly worked in cooperation, for one eagle harassed the vulture which, in rearing up in threat posture, kicked its downy nestling out of the nest, whereupon the second eagle flew in and grabbed it. Such cooperation has also been suggested by Bowen (1970).

Incident no. 14 in Table 1 deserves separate comment. The Gonarezhou National Park in the southeast corner of Zimbabwe is a savanna wildlife area. In the whole Park there is only one stretch of cliffs, and one pair of Black Eagles nests on them. At 0700 H one morning, an adult was seen in the nest of a pair of White-headed Vultures (*Trigonoceps occipitalis*) eating the nestling, which was just becoming feathered (but had been plucked) and was estimated to be 50 d of age from its wing length (Mundy 1982). The eagle was presumed to have killed the nestling, as the carcass was very fresh and there were signs of hemorrhaging on the downy feathers and on some of the bones; unfortunately it was not noticed if there was any subcutaneous hemorrhage. The distance between the eagle's nest on the cliffs and the vulture's nest in the savanna country was 10 km. This is the only incident when we have seen the eagle actually eating a vulture nestling.

In addition to the 14 attacks on nestlings and eggs that are listed in Table 1, we have also collected three "contacts" by Black Eagle on Cape Griffon Vultures and one on a Bearded Vulture (*Gypaetus barbatus*) (Table 2). The eagle may or may not harass a vulture on the cliff, but then flies after it and strikes it in mid-air. For incident no. 1 (Table 2), the vulture was knocked to the ground and it died (Pitman 1960). For incident no. 4, the eagle flew after a group of vultures for an estimated 2 km, and for no apparent reason struck one in mid-air and

Table 1. Attacks (presumed predatory attempts) by Black Eagles on vulture eggs and nestlings.

DATE	PLACE ^a	TARGET ^b	BLACK EAGLES	RESULT ^c	OBSERVER
1. —	Magaliesberg, SA	CGV eyas	2 adults	S	Bowen (1970)
2. —	Mannyelanong, B	CGV eyas (d) ^d	—	S	Steyn (1973)
3. June 1974	Magaliesberg, SA	CGV egg	1 juvenile	U	P J M
4. September 1980	Langeberg, SA	CGV eyas	2 adults	U	Boshoff (1981).
5. September 1980	Langeberg, SA	CGV eyas	1 adult	U	Boshoff (1981).
6. September 1980	Langeberg, SA	CGV eyas	1 adult	U	Boshoff (1981).
7. October 1980	Kransberg, SA	CGV eyas (p)	1 subadult	S	T O'C
8. July 1981	Potberg, SA	CGV egg	1 subadult	U	A S R
9. December 1981	Potberg, SA	CGV eyas (p)	2 adults	U	A S R
10. December 1981	Potberg, SA	CGV eyas (p)	1 adult	U	A S R
11. January 1982	Potberg, SA	CGV eyas (p)	1 juvenile	U	A S R
12. July 1982	Magaliesberg, SA	CGV eyas (d)	1 adult	S	J K
13. July 1982	Magaliesberg, SA	CGV eyas (d)	2 adults	S	J K
14. October 1982	Gonarezhou, Z	WHV eyas (p)	1 adult	S	P J M

^a Places are Botswana (B), South Africa (SA), and Zimbabwe (Z).

^b Target species are Cape Griffon Vulture (CGV), and White-headed Vulture (WHV).

^c Results are successful (S) for the eagle, or unsuccessful (U).

^d Vulture nestlings were sometimes recorded as feathered (p) or downy (d).

caused it to tumble; the vulture continued flying, and the eagle flew away from it. For the incident with the Bearded Vulture, where both adult eagles were involved, it seems that the eagles may have been defending their nesting area.

DISCUSSION

The Black Eagle is said to be an "opportunist" hunter that takes whatever may be available to it (V. Gargett *in litt.*). Those eagles that live with a colony

Table 2. Attacks by Black Eagles on flying vultures (with abbreviations as for Table 1).

DATE	PLACE ^a	TARGET ^b	BLACK EAGLES	RESULT	OBSERVER
1. December 1958	Mannyelanong, B	CGV	1 adult	CGV killed	Pitman (1960)
2. - 1980	Drakensberg, SA	BV immature	2 adults	BV "limping"	Damp (1980)
3. December 1981	Potberg, SA	CGV adult	1 adult	no contact	A S R
4. May 1983	Magaliesberg, SA	CGV	1 adult	CGV unharmed	P J M

^a Places are Botswana (B) and South Africa (SA).

^b Target species are Cape Griffon Vulture (CGV) and Bearded Vulture (VB).

of vultures certainly attack nestlings (and eggs) and flying vultures. While we have seen an eagle actually eat a vulture nestling only once, we have seen eagles remove nestlings several times and have seen the birds thwarted at their attempts at other times. We regard these attacks on nestlings (and eggs) as attempted predation. In contrast, the attacks by the Black Eagle on flying vultures are likely to be territorial encounters, even though in one instance the vulture was knocked to the ground. Pitman (1960) called this incident "predation," but we do not regard it as such as the eagle did not follow the vulture to the ground.

Downy vulture nestlings weigh less than 3 kg, and can be carried by an eagle, but feathered ones are likely to be too heavy and certainly too unwieldy; these can be knocked to the ground. Eagles pluck their prey, and the White-headed Vulture nestling was also plucked in the nest. In addition, at the foot of cliffs where Cape Griffon Vultures breed we have often found piles of feathers plucked from nestlings; we suggest that these are the result of eagle attacks and that they represent true predation. Vulture nestlings may fall out of their nests and be scavenged by mammals such as Jackals (*Canis* spp.) and the Porcupine (*Hystrix africaeaustralis*), but these do not pluck prey or carrion.

Black Eagles breed from April to June, and the young fledge in August to October (Steyn 1982); the Cape Griffon Vulture breeds at the same time but its young fledge in October to December. Thus the eagle has a potential food supply throughout its breeding season, and Table 1 shows that the eagle takes the opportunity throughout that period. (The lack of observations from February through April are due both to there being no vulture nestlings at this time, and also because these months are in the rains when observations are more difficult to make). We have visited an eagle nest in a vulture colony only once, in the Magaliesberg in September 1976, and no vulture remains were found. Nor do we know of any instance where vulture remains have been found in Black Eagle nests, though eagles in vulture colonies have not been studied in this respect (Allan 1984).

The Black Eagle and the White-headed Vulture do not overlap in their nesting niches, and do not compete for any resources as far as is known. We regard the predation incident as described above (no. 14 in Table 1) as most unusual, and do not think that the eagle is of any significance in the life

of this vulture. By contrast, the Black Eagle must be regarded as a capable and perhaps frequent predator of the nestlings of the Cape Griffon Vulture simply because the two species occupy the same nesting niche. The observations of unsuccessful attacks by the eagle, however, where it has been repelled by the vultures, highlight one of the advantages associated with colonial breeding. That is, a clumped group of nesting vultures with each parent involved in chasing away a potential predator from its nest, results in an increased repulsion effect. The Black Eagle is certainly seen by the Cape Griffon Vulture as a threat, and the vulture has a characteristic and hoarse call that is directed at an eagle flying past the nest. Vulture nestlings of all ages are vulnerable to predation, which is perhaps why there is usually a parent in attendance throughout the nestling period (Mundy 1982). In addition, we suggest that the nestling plumage has a camouflage function, which is enhanced by the typical raptor reaction to disturbance or to intruders of crouching motionless and facing into the cliff wall (Fig. 1). The plumage of the nestling is streaked. In color it is creamy-white dorsally, the flight feathers are a dark slate, and the last row of upper-wing coverts (i.e., the greater coverts) are pointed with a conspicuous white tip (Fig. 1). When the feathered nestling crouches the visual impression is one of an accumulation of white mutes trickling down a dark rock. Feathered nestlings of the Rüppell's Griffon (*G. rueppellii*) have the same



Figure 1. A well-feathered Cape Vulture nestling, aged about 11 weeks.

coloration and patterning as do those of the Cape Griffon Vulture (pers. obs.), and this species may also live with the Black Eagle.

The vulnerability of vulture eggs and nestlings to predation by the Black Eagle, incidentally, is increased if the parent birds are disturbed on their ledges, and man-induced disturbance should therefore be kept to a minimum.

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